Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.

Issued November 26, 1907.

U. S. DEPARTMENT OF AGRICULTURE,
FOREST SERVICE—Circular 120.
GIFFORD PINCHOT, Forester.

(IN COOPERATION WITH THE DEPARTMENT OF COMMERCE AND LABOR,
BUREAU OF THE CENSUS, S. N. D. NORTH, DIRECTOR.)

CONSUMPTION OF PULPWOOD IN 1906.

WASHINGTON : GOVERNMENT PRINTING OFFICE : 1907

Previous to 1905, statistics upon the production of lumber and timber products were collected by the Bureau of the Census in connection with the decennial and quinquennial censuses of manufactures. To satisfy the urgent demand for more frequent reports upon these important products, the Forest Service collected statistics of the production in 1905. In 1906 the Census and the Forest Service arranged to cooperate in the preparation of annual statistics of forest products.

The collection and compilation of the statistics of production in 1906, therefore, have been under the direct supervision of W. M. Steuart, Chief Statistician for Manufactures, and J. E. Whelchel, Expert Chief of Division, on the part of the Bureau of the Census; and R. S. Kellogg, Chief of the Office of Wood Utilization, and H. M. Hale, Forest Assistant, on the part of the Forest Service.

CONSUMPTION OF PULPWOOD IN 1906.

The chief features of the year 1906 in connection with the manufacture of wood-pulp were:

(1) A consumption of wood greater by 469,053 cords than that of any previous year.

(2) The highest average value per cord for all kinds of wood.

(3) An increase of 93,000 cords in the imports of pulpwood. Of the two woods imported—spruce and poplar—spruce alone showed an increase; poplar decreased by over 5,000 cords.

(4) Since 1899 the amount of wood consumed each year for pulp has increased, in round numbers, from 2 million cords to 3½ million cords.

CONSUMPTION.

In 1906 the consumption of wood for pulp exceeded the high-water mark of 3,192,123 cords reached in 1905 by nearly one-half million cords, making the total consumption, by 250 mills, 3,661,176 cords. The year showed a heavy increase in the consumption of hemlock wood, practically all of which is reduced by the sulphite process. Except balsam, the consumption of which fell off by nearly 23,000 cords, or 40 per cent, all other kinds of timber show a normal increase in quantities consumed. The increase for poplar was less than for any of the others, and its consumption remained nearly stationary.

Table 1 shows the quantity of wood of different kinds used for the manufacture of pulp in 1899, 1905, and 1906.

TABLE 1.—*Kinds and amounts of wood manufactured into pulp.*

Kind.	Quantity.			Per cent of increase (+) or decrease (−).	
	1899.	1905.	1906.	1899 to 1905.	1905 to 1906.
	Cords.	*Cords.*	*Cords.*		
Spruce	1,509,202	2,273,254	2,507,002	+50.6	+ 10.3
Poplar	256,953	322,058	328,470	+25.3	+ 2.0
Hemlock	(a)	375,422	528,381	....	+ 40.7
Pine	(a)	57,399	69,277	....	+ 20.7
Balsam	(a)	56,744	33,886	....	− 40.3
Cottonwood	(a)	10,507	....	....	....
All other	220,155	96,739	194,160	−56.1	+100.7
Total	1,986,310	3,192,123	3,661,176	+60.7	+ 14.7

[a] Included in "All other."

[Cir. 120]

In the census of 1899 the only kinds of wood distinguished were spruce and poplar; all other kinds were grouped under a single head. In 1899 spruce furnished over 75 per cent of all the wood used; in 1905, about 70 per cent, and in 1906 a little less than 70 per cent. It is interesting that the proportion of spruce used has remained so nearly constant in spite of the fact that the total quantity of wood consumed has nearly doubled in the same period and that other woods have been introduced in large quantities. Since 1899, poplar, which for years was used in connection with spruce to the exclusion of all other woods, has increased in total quantity less than 100,000 cords, due to its very limited supply. At present it is outranked by both spruce and hemlock.

Table 2 shows the details of the consumption of pulpwood by States and processes.

Table 2.—*Wood used in the production of pulp in 1906, by species, States, and processes.*

MECHANICAL PROCESS.

State.	Spruce.		Poplar.		Balsam.	Hemlock.	Pine.	Miscellaneous.	Total.
	Domestic.	Imported.	Domestic.	Imported.					
	Cords.	*Cords.*	*Cords.*	*Cords.*	*Cords.*	*Cords.*	*Cords.*	*Cords.*	*Cords.*
Maine	120,390	13,134	1,274	....	190	....	715	2	135,705
Massachusetts	1,900	....	750	....	155	25	10	....	2,840
Michigan	6,727	....	50	2,129	64	....	741	....	9,711
Minnesota	31,531	....	125	....	192	....	....	....	31,848
New Hampshire	73,338	18,000	....	....	....	....	....	....	91,338
New York	385,472	217,233	2,357	....	2,668	4,000	4,033	....	615,763
Ohio	4,132	....	....	....	....	....	....	....	4,132
Oregon	20,700	....	....	....	....	....	....	20,090	40,790
Pennsylvania	1,351	....	....	....	....	3,108	600	....	5,059
Vermont	15,914	16,413	1,123	....	1,518	....	....	....	34,968
Virginia	....	....	31	....	....	....	3,059	....	3,090
West Virginia	7,302	....	....	....	....	....	....	....	7,302
Wisconsin	148,861	25,300	4,765	....	6,785	4,736	4,558	536	195,541
All other	8,893	....	....	....	....	....	1,400	9,400	19,693
Total	826,511	290,080	10,475	2,129	11,572	11,869	15,116	30,028	1,197,780
SULPHITE PROCESS.									
Maine	257,962	82,124	....	....	....	....	....	....	340,086
Massachusetts	20,661	....	....	....	....	....	....	6,405	27,066
Michigan	7,533	25,404	....	....	1,142	71,289	....	193	105,561
Minnesota	....	....	....	....	....	....	....	....	....
New Hampshire	140,499	81,092	....	....	6,000	800	....	....	228,391
New York	358,108	224,742	....	....	5,737	21,277	....	....	609,864
Ohio	....	....	....	....	....	15,883	....	8,708	24,591
Oregon	....	....	....	....	....	20,480	....	10,904	31,384
Pennsylvania	9,273	15,380	....	....	....	106,020	....	....	130,673
Vermont	....	....	....	....	....	....	....	....	....
Virginia	50,646	....	....	....	....	....	....	....	50,646
West Virginia	42,513	....	....	....	....	11,921	....	....	54,434
Wisconsin	57,013	....	....	....	9,435	261,842	....	771	329,061
All other	1,262	....	....	....	....	7,000	3,600	15,000	26,862
Total	945,470	428,742	....	....	22,314	516,512	3,600	41,981	1,958,619

TABLE 2.—*Wood used in the production of pulp in 1906, by species, States, and processes*—Continued.

SODA PROCESS.

State.	Spruce.		Poplar.		Balsam.	Hemlock.	Pine.	Miscellaneous.	Total.
	Domestic.	Imported.	Domestic.	Imported.					
	Cords.	*Cords.*	*Cords.*	*Cords.*	*Cords.*	*Cords.*	*Cords.*	*Cords.*	*Cords.*
Maine	11,927		129,025	1,000					141,952
Massachusetts			3,185	211					3,396
Michigan									
Minnesota									
New Hampshire									
New York			38,677	14,210				17,390	70,277
Ohio			2,000					4,000	6,000
Oregon									
Pennsylvania			36,494				41,481	69,266	147,241
Vermont									
Virginia			28,028						28,028
West Virginia									
Wisconsin	52	2,500	200					15,000	17,752
All other	1,720		62,836				9,080	16,495	90,131
Total	13,699	2,500	300,445	15,421			50,561	122,151	504,777

New York uses more than one-half of the wood reduced by the mechanical process, and more than three times as much as Wisconsin, the State next in rank. Maine, New Hampshire, Oregon, Vermont, and Minnesota follow in the order given.

In the consumption of wood by the soda process Pennsylvania and Maine together consumed more than one-half of the total quantity, Pennsylvania ranking first. The total quantity consumed by the mechanical process was 1,197,780 cords and by the sulphite process 1,958,619 cords. By the soda process 504,777 cords were reduced, of which poplar constituted less than three-fifths. This is rather a striking condition, since no longer ago than 1899 poplar was the only kind of wood reported as being reduced by the soda process. At the present time pine, spruce, and hardwoods, which are not shown separately but are included in the miscellaneous column, enter into the total.

In both the consumption of wood and manufacture of pulp New York has ranked first from the time of the earliest data of which there is record. In 1906 New York alone consumed 1,295,904 cords, or more than twice as much as Maine, which ranks next, with 617,743 cords. Wisconsin ranks third, with 542,354 cords. New Hampshire follows, with 319,729, Pennsylvania with 282,973, and Michigan with 115,272 cords. No other State consumed as much as 100,000 cords. It is interesting that the consumption of New York shows a small decrease from the 1905 figures, while Maine, Wisconsin, Pennsylvania, and New Hampshire have all increased their consumption.

It should be borne in mind in connection with these figures that in practically no case is all the wood produced in the same State in which it is consumed. In New York, for example, the report of the State forest, fish, and game commission shows a cut of 516,778 cords of pulpwood in 1906, or approximately 40 per cent of the amount of wood used by the pulp mills of the State.

MECHANICAL PROCESS.

Domestic spruce ranks first in the mechanical process, with 826,511 cords, and imported spruce second, with 290,080 cords. Of the domestic spruce 385,472 cords and of the imported spruce 217,233 cords were reduced in New York.

The amount of poplar reduced mechanically is comparatively small, amounting to about 12,500 cords. Hemlock and balsam are both used in small quantities. The quantity of pine, however, exceeds that of all other woods except spruce, amounting to over 15,000 cords.

SULPHITE PROCESS.

Of the total amount of wood used in the sulphite process, spruce furnishes about two-thirds and hemlock more than one-fourth. Balsam, pine, and other woods form an unimportant part of the total. As in the mechanical process, New York leads in total consumption with more than one-half million cords, or about one-half of the total amount of spruce consumed by this process. Maine ranks next, with about one-fourth of the total, followed by New Hampshire, with a much smaller amount. A much larger proportion of the imported spruce is reduced by the sulphite than by the mechanical process.

Wisconsin produces more than one-half of the hemlock that is used, followed by Pennsylvania. The combined consumption of hemlock in these two States amounts to three-fifths of the total amount used.

SODA PROCESS.

In 1906, 504,777 cords of wood were reduced by the soda process. About three-fifths of this was poplar, a negligible quantity of which was imported. Maine furnished 129,025 cords of poplar, or more than three times as much as any other State. New York ranks second, Pennsylvania third, and Virginia fourth.

Table 3.—*Kind and amounts of wood manufactured into pulp by various processes in 1906.*

[Number of mills, 250.]

Kind.	Total cords.	Process.			Per cent.
		Mechanical.	Sulphite.	Soda.	
Spruce:					
Domestic	1,785,680	826,511	945,470	13,699	48.8
Imported	721,322	290,080	428,742	2,500	19.7
Poplar:					
Domestic	310,920	10,475		300,445	8.5
Imported	17,550	2,129		15,421	.5
Hemlock	528,381	11,869	516,512		14.4
Balsam	33,886	11,572	22,314		.9
Pine	69,277	15,116	3,600	50,561	1.9
Miscellaneous	194,160	30,028	41,981	122,151	5.3
Total	3,661,176	1,197,780	1,958,619	504,777	

Table 3 summarizes the reduction of the different kinds of wood by the three processes for 1906. Spruce occupies the leading place in both the mechanical and sulphite processes, but is relatively unimportant in the soda process. The proportion of spruce to the total amount of wood consumed shows a slight reduction. In 1905 it constituted 71 per cent of the total, while in 1906 it constituted 68½ per cent. Hemlock is doubtless largely responsible for the falling off in the relative consumption of spruce. Similarly, poplar shows a very slight reduction in the percentage consumed. In 1905 this species furnished 10 per cent of the total, while in 1906 it furnished 9 per cent. Hemlock, on the other hand, increased from 11 to over 14 per cent, and the miscellaneous item, which includes hardwoods, yellow pine, and most of the Pacific coast species, increased also.

Table 4 summarizes by States the quantity and value of wood used for pulp and the amount of pulp produced during the years 1905 and 1906.

Table 4.—*Wood used for pulp in 1905 and 1906.*

State.	1906		Average price per cord.[a]	Estimated quantity of pulp produced.	1905		Average price per cord.[b]	Estimated quantity of pulp produced.
	Amount.	Value.			Amount.	Value.		
	Cords.	*Dollars.*	*Dollars.*	*Tons.*	*Cords.*	*Dollars.*	*Dollars.*	*Tons.*
Maine	617,743	4,575,100	7.41	383,535	501,807	2,950,625	5.88	323,012
Massachusetts	33,302	262,030	7.87	18,086	34,362	171,810	5.00	16,995
Michigan	115,272	663,055	5.74	57,099	109,764	475,278	4.33	63,275
Minnesota	31,848	191,833	6.02	25,406	31,802	121,801	3.83	24,742
New Hampshire	319,729	2,364,270	7.39	174,543	233,700	1,257,306	5.38	128,898
New York	1,295,904	10,351,247	7.99	945,379	1,301,986	8,137,412	6.25	977,313
Ohio	34,723	189,011	5.44	16,868	54,000	274,320	5.08	29,050
Oregon	72,174	373,591	5.18	49,304				
Pennsylvania	282,973	1,583,117	5.59	127,356	250,826	1,158,816	4.62	123,372
Vermont	34,968	290,384	8.30	38,403	22,271	122,490	5.50	20,207
Virginia	81,764	621,002	7.60	43,902	89,540	492,470	5.50	44,649
West Virginia	61,736	383,687	6.21	33,577	96,357	497,202	5.16	49,857
Wisconsin	542,354	3,708,540	6.84	338,997	382,471	1,686,697	4.41	240,657
Others	136,686	855,020	6.26	75,389	83,337	389,438	4.67	42,455
Total	3,661,176	26,411,887	7.21	2,327,844	3,192,223	17,735,665	5.56	2,084,482

[a] At mill.

[b] At shipping point.

New York led in both 1905 and 1906. In 1906 Maine ranked second, Wisconsin third, New Hampshire fourth, and Pennsylvania fifth. In 1905, however, Pennsylvania ranked fourth and New Hampshire fifth, a reverse of the order of 1906.

The average price per cord of wood in 1906, $7.21, is much higher than in 1905, when it was $5.56. The difference is accounted for mainly by the fact that manufacturers were asked to report the value at point of shipment in 1905 and at the mill in 1906. The highest average price, $8.30 per cord, is credited to Vermont, followed by New York and Virginia, while the lowest price, $5.18 per cord, is in Oregon. The strong market for lumber of all kinds during the year doubtless helped to force up the price of pulpwood, but on the other hand it is well understood that most of the large tracts of pulpwood timber are rapidly passing into the control of large pulp producers, who in many instances are holding them in reserve for future supply and are purchasing for their present needs in the open market. This action necessarily withdraws from the present source of supply a considerable area which would otherwise form an important part of it. In order to secure their supply certain of the middle Western States have invaded the eastern market, and this doubtless strengthened it.

Table 5 shows the quantity of wood consumed by the mechanical and chemical processes for the years 1899, 1905, and 1906. It will be seen that the increase has been greater in the chemical process, and that more than twice as much wood is being reduced in this manner than by the mechanical process. In consideration of the very much smaller product obtained per cord of wood by the chemical process, the actual amounts of pulp produced each year by the two processes is doubtless about equal.

Table 5.—*Comparison of total amounts of wood used for pulp in 1899, 1905, and 1906.*

Process.	1899.	1905.	1906.	Increase.	
				1899 to 1905.	1905 to 1906.
	Cords.	*Cords.*	*Cords.*	*Per cent.*	*Per cent.*
Mechanical	786,840	1,096,804	1,197,780	39.4	9.2
Chemical	1,199,470	2,095,419	2,463,396	74.7	17.6
Total	1,986,310	3,192,223	3,661,176	60.7	14.7

EXPORTS AND IMPORTS.

All of the wood imported into the United States for the manufacture of pulp comes from Canada and is free from duty. The amount has increased from 369,217 cords in 1899 to 738,872 cords in 1906, as shown in Table 6. Since 1905 the imports have increased nearly 15 per cent. Only two kinds of wood are imported for pulp—spruce and poplar—and the quantity of poplar is very small. Imports of it, however, have fallen off nearly 25 per cent since 1905.

TABLE 6.—*Comparison of wood imported from Canada for pulp in 1899, 1905, and 1906.*

Kind.	1899.	1905.	1906.	Increase (+) or decrease (−).	
				1899 to 1905.	1905 to 1906.
	Cords.	*Cords.*	*Cords.*	*Per cent.*	*Per cent.*
Spruce	349,084	622,545	721,322	+78.3	+15.8
Poplar	20,133	22,883	17,550	+13.7	−23.3
Total	369,217	645,428	738,872	+74.8	+14.5

Table 7 shows the quantity and value of the imports of wood-pulp for the fiscal years 1902 to 1906, inclusive.

For the fiscal year ending June 30, 1906, the imports of wood-pulp amounted to 157,224 tons valued at $4,584,942. This amount is less by over 10,000 tons than the quantity imported during 1905, which indicates that a strong market is developing abroad for this product and that it is more profitable for Canadian manufacturers to market their product elsewhere than in the United States. Much the greater part of the imported wood-pulp comes from Canada.

TABLE 7.—*Wood-pulp imported, 1902–1906.*[a]

QUANTITY.

Country.	1902	1903	1904	1905	1906
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Europe	16,154	34,896	43,381	36,622	40,966
North America	51,262	81,985	101,415	130,882	116,258
Total	67,416	116,881	144,796	167,504	157,224

VALUE.

Country.	1902	1903	1904	1905	1906
	Dollars.	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars*
Europe	736,574	1,520,747	1,786,097	1,820,412	2,081,580
North America	1,322,518	1,867,023	1,816,571	2,680,543	2,503,362
Total	2,059,092	3,387,770	3,602,668	4,500,955	4,584,942

[a] From annual report of the Bureau of Statistics of the Department of Commerce and Labor upon the commerce and navigation of the United States.

The quantity of wood imported for pulp in 1906, however, exceeds the quantity imported in 1905 by over 93,000 cords. Estimating an average yield of one-half ton of pulp per cord of wood, the quantity of pulp manufactured from this amount of imported wood is more than four times the loss in the imports of wood-pulp.

In 1906 Europe sent over 40,966 tons, or a little less than one-fourth of the total quantity of wood-pulp imported. In spite of the fact that wood-pulp is a dutiable commodity, an increased amount of it has been imported for the last five years. In fact, the total quantity has more than doubled during the time.

The exports of wood-pulp in 1906 amounted to 14,741 tons, which is an increase of 2,889 tons over 1905. The largest quantity exported in the last five years was during 1902, when over 19,000 tons were sent abroad. At the present time the United States is exporting six-tenths of 1 per cent, and importing 6.7 per cent of the estimated total consumption of wood-pulp.

TABLE 8.—*Wood-pulp exported, 1902–1906.*[a]

QUANTITY.

Country.	1902	1903	1904	1905	1906
	Tons.	*Tons.*	*Tons.*	*Tons.*	*Tons.*
Europe	17,305	8,939	12,057	9,571	11,605
North America	1,307	1,721	2,024	1,720	2,605
South America	27	....	110	61	84
Asia	500	382	625	207	325
Oceania	35	81	299	200	71
Africa	....	109	....	93	51
Total	19,174	11,232	15,115	11,852	14,741

VALUE.

Country.	1902	1903	1904	1905	1906
	Dollars.	*Dollars.*	*Dollars.*	*Dollars.*	*Dollars.*
Europe	661,011	356,339	478,682	386,533	468,856
North America	51,173	67,221	75,339	63,584	95,622
South America	1,375	....	4,758	2,596	4,005
Asia	25,168	15,631	19,288	9,028	15,357
Oceania	1,376	3,245	15,366	8,964	2,843
Africa	....	2,792	41	2,880	1,195
Total	740,103	445,228	593,474	473,585	587,878

[a] From annual report of the Bureau of Statistics of the Department of Commerce and Labor upon the commerce and navigation of the United States.

Of the wood-pulp imported into the United States, about equal quantities are manufactured by the mechanical and chemical processes, and while unmanufactured wood is admitted free of duty, mechanical pulp carries a duty of one-twelfth of a cent per pound, or approximately $1.66 a ton. The duty per ton on chemical pulp is higher than on mechanical. Unbleached chemical pulp carries a duty of one-sixth of a cent a pound, or about $3.33 per ton; bleached chemical pulp one-fourth of a cent a pound, or nearly $5 per ton. By far the greater part of the pulp imported comes in either as mechanical pulp or unbleached chemical pulp. Bleached chemical pulp, which carries the highest duty, constitutes less than one-fifth of the total amount. The average import value per ton of pulp manufactured by the mechanical process, as shown by the imports, is $14; unbleached chemical pulp, $34 per ton, and bleached chemical pulp, $50 per ton.

Approved:

JAMES WILSON,
Secretary of Agriculture.

WASHINGTON, D. C., *September 27, 1907.*

[Cir. 120]